DIGIAIR PRO ISDB-T
USER MANUAL

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DIGIAIR PRO – DESCRIPTION

Emitor´s DIGIAIR Pro is developed in Sweden for exact alignment and adjustment of terrestrial antennas.
This is made for both analog (dBuV) and digital ISDB-T.

DIGIAIR Pro is microprocessor controlled, making it very reliable and accurate. Signal strength is presented on the LCD-display. In analog mode it shows a single channel or six channels at the same time. You can also choose to view the signal in spectrum mode.

In digital mode it displays the BER (bit error rate) and SNR (signal/noise ratio). Readout of ISDB-T layer information is also easy to do.
Furthermore DIGIAIR Pro present pitchtones (the higher tone the stronger signal) on a loudspeaker.

DIGIAIR Pro is very sensitive and can detect even the weakest signals.
DIGIAIR Pro can feed Voltage (0/5/12/24 Volt) to external active antennas this feature is short-circuit protected by an automatic fuse.

DIGIAIR Pro is charged via an external DC power-source of 10 -15 volt.
The DIGIAIR PRO operates with 8xAA rechargeable batteries. The unit will works for at least 2 hours with fully charged batteries.

1 Getting Started

1.1 Power ON/OFF

To turn the unit ON, simply push the **Power ON/OFF** button (the unit is battery operated).
The unit starts in **Single channel mode**, showing the signal on the meter. To turn the unit OFF, push and hold down the **ON/OFF** button.

1.2 Power supply and battery

DIGIAIR PRO can be fed by an external power-supply through the VDC port, by an external power-source (10-18v dc, max 1A). This is useful in case that the battery goes empty during an installation. Connect the power-source and hold down the ON button for a couple of seconds (until the unit turns On).
To turn the unit OFF when the unit is fed by an external power-supply, simply disconnect the power-source.

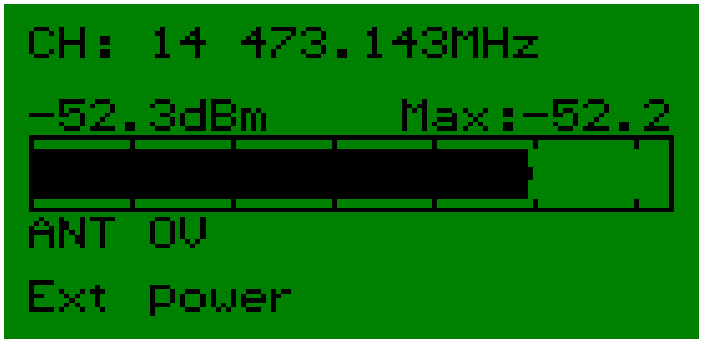
A discharged battery takes about 14 hours to recharge. The recharging is controlled by the units microprocessor and is indicated on the display. Please notice that to obtain full capacity of new batteries it is necessary to recharge and run down the battery-pack a couple of times.

The meter has 8 x AA rechargeable NiMe batteries in the battery-compartment. Apart from recharging the battery the unit does not need any particular maintenance. The unit should be recharged when the battery is empty (indicated with a battery-indicator symbol on the display in **Single channel mode**). It is preferably done with one of the enclosed chargers (the power-supply or the car-charger).
A fully charged battery is operational for more than two hours (depending on the external antenna load).

1.3 How to use the meter

Start by connecting the antenna and then turn the meter On.

The userinterface works as a “revolver” where the meter starts in **Single channel-mode** (and the latest channel selected), readout of the signallevel in dBuV, dBm or dBmV.

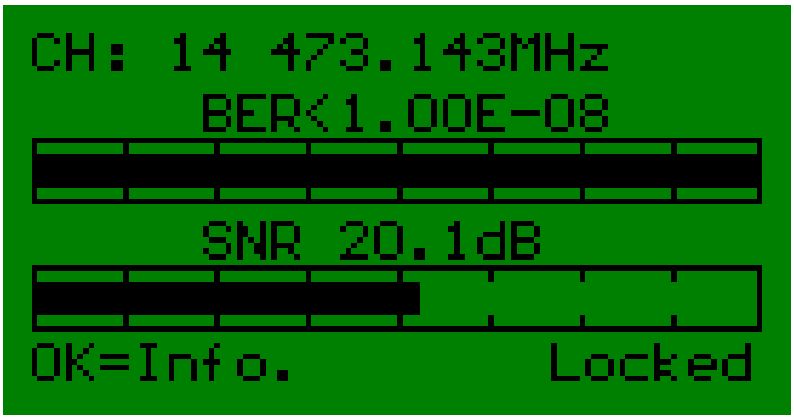


It is very easy to point an antenna towards a transmitter in this mode. The “maxhold function” (small bar in the big bar) will make it very accurate.

1.4 Attenuator

If the incoming signal is very strong (the bar in the thermometerscale reaches 100%) it can easily be attenuated with a push on the OK button (about -20dB).

Press down the mode button again when the antenna is pointed in the right direction. This will put the meter in the **Digital-mode.**

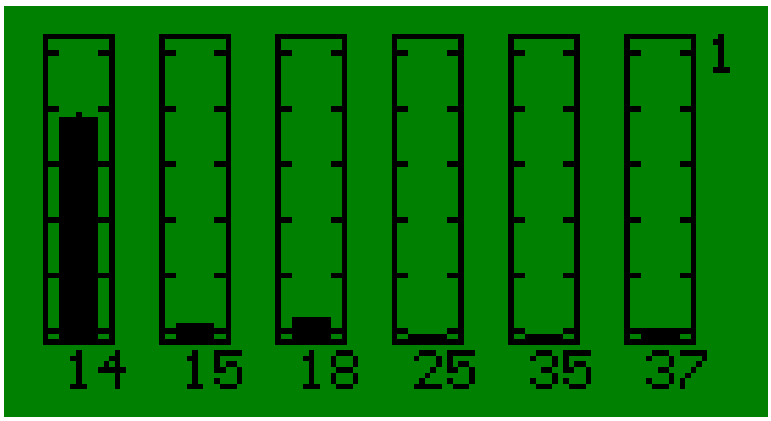


Hopefully, but not always, the digital readout; BER (bit error rate) and SNR (signal noise ratio) will correspond well with the analog setting of the antenna.

Quite often the antenna needs to be re-directed a little bit in order to maximize the digital-values (which are of more importance then the analog readout).

The **modulation error ratio** or **MER** is a measure used to quantify the performance of a digital transmitter in a communications system using digital modulation (such as QAM). A signal sent by an ideal transmitter or received by a receiver would have all constellation points precisely at the ideal locations, however various imperfections in the implementation (such as noise, low image rejection ratio, phase noise, carrier suppression, distortion, etc.) or signal path cause the actual constellation points to deviate from the ideal locations.

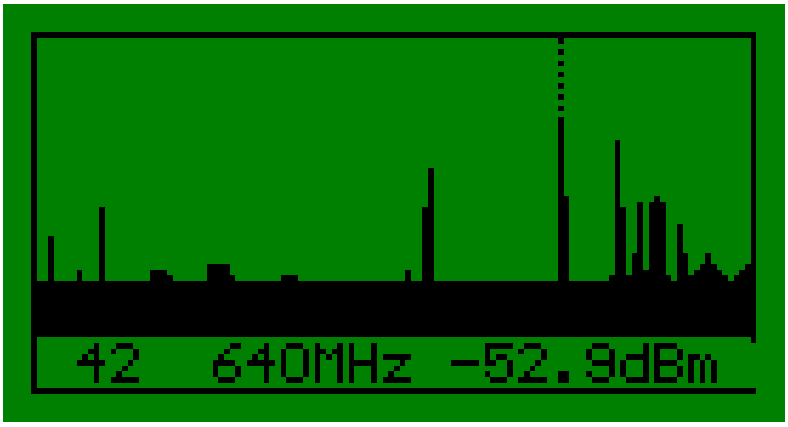
Pressing the Mode button again will take the meter to the **Multichannel-mode** where the analog (dB) signal strength of up to 30 channels can be easily readout.



The display shows six channels on each page and there are five pages. Step through the pages with the “UP” and “DOWN” buttons.

The **Spectrum-mode** is accessed with another push on the MODE button

The meter shows the frequency spectrum of 48-860 MHz. A marker can select a certain channel (with the “UP”, “DOWN” buttons).
Signallevel (in dBuV, dBm or dBmV) of that channel will be shown in the display also.



Another push on the mode button will take the meter back to Singlechannel-mode

2. Description of functions

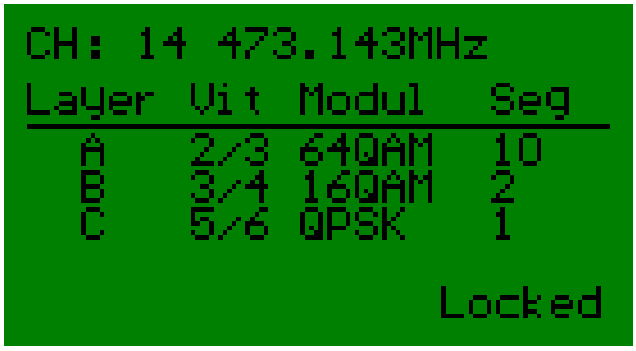
2.1 **Single channel-mode** (view one channel)

In this mode the meter measure analog signal strength on the selected channel. The higher dB value, the better signal. The maximum signal received is also indicated. To change the channel, use the **UP /DOWN** buttons.
If the unit is feeding power to an antenna it is indicated with the 0V, 5V, 12V or 24V symbol. This function can be selected in the **Antenna voltage** menu. The battery indicator is not shown when the unit is fed by an external power-supply

2.2 **Digital-mode** (view digital)

BER (Bit Error Rate) and SNR (Signal/Noise Ratio) is presented in this mode. The BER should be as low (less errors) as possible. The SNR should be as high as possible (the signal coming out of the noise as much as possible).
In order not to be confusing both digital bars should be as high as they can be. Signal-level shall increase from left to right.

More, very useful, digital info can be readout when pushing the **"OK**" button in this mode.
The following display will be shown on the LCD



CH = The selected channel (measured at) and frequency.

Layer	Indicates Layer A-C
Vit	Specify the code rate. 1/2, 2/3, 3/4, 5/6 or 7/8.
Modul	Modulation type. 16 QAM , 64 QAM, QPSK or DQPSK.
Seg	Number of segments used for this layer.

2.3 **Multi channel-mode** (view six channels)

In this mode the meter measure the signal strength of six individually selected channels. DIGIAIR Pro can be set up with five such pages of six channels (5x6

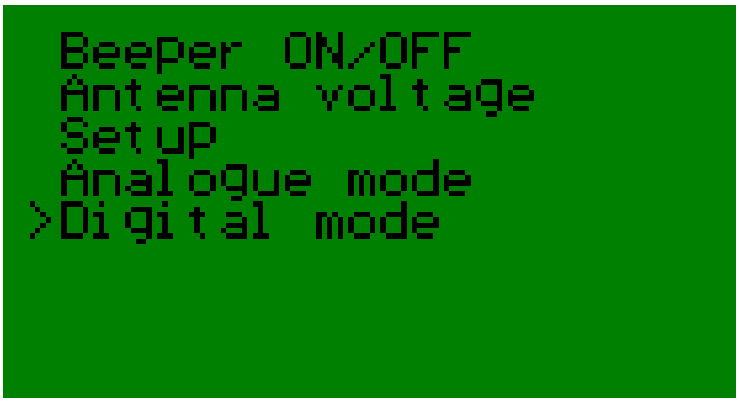
channels). The page number is indicated in the top-right corner. To scroll through the pages use the **UP/DOWN** buttons. To show/hide the channel numbers use the **OK** button. The max-peak values are reset when changing page.

2.4 Spectrum-mode (view spectrum)

In this mode the meter shows all the channels between 45 MHz to 860 MHz. One pixel-line represents one channel.
Move the cursor (the animated dotted line) with the **UP** and **DOWN** buttons and place it over a “peak” (channel).
The signal-strength of the chosen channel is shown in the LCD (in dBuV, dBmV or dBm).

3. Menu

The following menu is shown on the display when pressing down the **MENU** button: This is the main menu. Use the “UP”/”DOWN” buttons to scroll up and down in the menu system. Use the “OK” button to enable the selected function.



3.1 Beeper

Choose **Beeper On/Off** in the main menu to turn the beeper (pitch tone) On or Off. It is only audible in **Single channel mode**. The idea is to help finding the strongest signal on the selected channel by listening to the highest pitch of the tone.

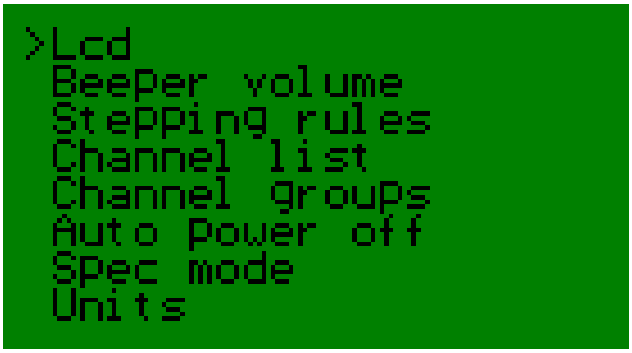
3.2 Antenna voltage

Choose **Antenna voltage** in the main menu and select 0V,5V,12V or 24V to be fed to the ANTENNA port. The power to the antenna port is changed immediately when the “OK” button is pushed even if you are in the main menu mode.
CAUTION! Do not connect the antenna to the antenna port before the correct voltage is chosen. If the antenna should be fed with 5 Volt and You accidentally choose 12 Volt instead, it may damage the antenna. The chosen

Voltage output to the antenna port is indicated on the LCD in **Single channel mode**.
The unit will turn off the antenna-voltage output if a short-circuit occur.

3.3 Setup

3.3.1. LCD



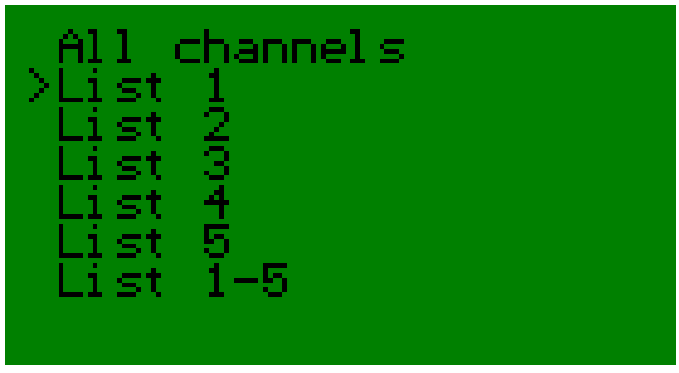
- Contrast
Set the contrast of the LCD-display. Lighter or Darker
- Backlite
Set the backlite of the LCD-display On or Off.

3.3.2. Beeper volume

Set the volume of the Beeper with a value from 1 (low) to 5 (high).

3.3.3. Stepping rules

In order to step the channels in a pre-selected way in single channel mode and digital mode simply select the list in this setup which corresponds with Your need.



3.3.4. Channel list

Chose the region/channelplan where the meter will be used.

3.3.5. Channel groups - Select channels

In this mode You can select the channels to be stored in DIGIAIR Pro´s memory. The stored channels are shown in **Multi channel mode**.
Set up the five pages with the channels of Your choice. Do like this:

A) The top value in the first bar (most to the left) is flashing when entering this setup. Step with the “UP”/”DOWN”-buttons to the channel You want to change.
Press the “MODE”-button to open up the memory position.
- *The channel nr will start to flash faster.*
- Set the new channel with the “UP”/”DOWN”-buttons.
- Press the “MODE” button and the new channel is locked at this position (memory saved).
- *The channel nr will flash in normal pace.*

B) - Chose the next channel to change by highlighting it with the “UP”/”DOWN” buttons.
- Press the “MODE”-button to open up the memory position.
- *The channel nr will start to flash faster*.
- Set the new channel with the “UP”/”DOWN”-buttons.
- Press the “MODE” button and the new channel is locked at this position (memory saved).
- *The channel nr will flash in normal pace.*

C) - Repeat **step B** until all wanted channels have been memorized.
- Press the **“OK”** button and the complete setting will be stored.

3.3.6. Auto power off

Set the meter for automatic switch Off after 1, 5, 10 or 30 minutes.
Or chose to have the meter always On (until manual switch Off).

3.3.7. Spec Mode

Chose between a linear spectrum between 48-860MHz or only the exact channel frequencies.

3.3.8. Units

Select the units to use. dbuV, dBm, or dBmV.

3.4 ANALOG MODE

Changes the channel list to analog tv frequencies. In this mode the digital measurements are not available. In this mode analog measurements are done in analog mode.

3.5 DIGITAL MODE

Uses the digital (center) frequencies of the channels. In this mode the analog measurements are done in digital mode (Channel Power).

4. Technical specification.

Input frequency:	48-860 MHz.
Input level:	30-80 dBuV.
Attenuator:	On/Off (approx -20 dB).
Input impedance:	75 Ohm, F-connector.
Short circuit protection:	Automatic fuse on antenna-input.
Measuring method:	
in digital:	Two bars showing: **- BER** (Bit Error Rate after viterbi). **- SNR** (Signal/noise ratio).
in analog:	One bar showing dBuV in high resolution or 6 bars showing strength of 6 channels. Spectrum display. Pitch tone indication from beeper.
Signal-level readout:	
Digital:	BER , SNR and MER values.
Analog:	dBuV, dBm, dBmV with maxhold-function.
Power out:	0V**,** 5V,12V and 24V.
Power supply/charger:	10 -15V DC (Centerpin+).
Display:	Back-lighted 128x64 Pixels LCD.
Power consumption:	500mA.
Battery:	8x AA rechargeable batteries of 1200mA each.
Weight:	0.7 kg.
Dimensions:	185 x 115 x 50 mm.
Accessories:	Power 12V DC, 1A Rubber-case. Car charger.

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